REMARKS

I. Present Status of the Application

The Office Action rejected claims 1-12 under 35 U.S.C. § 103(a) as being unpatentable over Background of the Invention (in the specification of this application) in view of Patterson et al. (US 5,080,958).

Upon entry of the amendments in this response, claims 1, 3-6, 8 and 9 are amended; claims 2 and 7 are canceled without prejudice; and claim 13 is newly added. Hence, claims 1, 3-6, 8-13 remain pending in the present application, with claims 1, 5 and 6 being independent claims. Claims 2 and 6 have been amended for further defining the scope of the invention, and support of the amendments can be found, for example, in original claims 2 and 7, and in specification, in paragraph [0019]. Claim 5 is rewritten in independent form and is further defined in the scope, support of which can be found, for example, in specification in paragraph [0021] and Fig. 5. The dependent claim 13 is added to further define the scope of claim 6, support of which can be found, for example, in FIG. 5. Applicants believe that the foregoing amendments do not introduce new matter. Thus, reconsideration of those claims is respectfully requested.

II. Response to Rejections under 35 U.S.C. § 103(a)

The Office Action The Office Action rejected claims 1-12 under 35 U.S.C. § 103(a) as being unpatentable over Background of the Invention (in the specification of this application) in view of Patterson et al. (US 5,080,958). The Examiner states that Background of the Invention

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discloses essential limitations as recited in independent claims 1 and 6, except the limitation that at least one of the dielectric layers is a ceramic dielectric layer. The Examiner, however, states that Patterson et al. teach at least one of the dielectric layers is a ceramic dielectric layer. The Examiner thus asserts that claimed invention is rendered obvious and unpatentable over Background of the Invention in view of Patterson et al. Applicants respectfully traverse the rejection as applied to the amended claims for at least the reasons set forth below.

The claimed invention provides, as claimed in the amended independent claims 1 and 6, a hybrid integrated circuit package comprising a plurality of dielectric layers wherein "at least one of the dielectric layers is a ceramic dielectric layer with one ceramic dielectric layer as a dielectric core layer," the dielectric layers are formed via a built-up method, and the dielectric layers have "a plurality of vias" therethrough. Because of its superior properties, the ceramic dielectric layer is used for producing an IC carrier with a high internal circuit density structure. For instance, the vias or through holes in the ceramic dielectric layer, compared with that in a organic dielectric layer, can have a smaller hole diameter, which is desirable for increasing the density of circuits of the patterned circuit layers.

Furthermore, the dielectric layers can be distributed, either symmetrically or non-symmetrically, on each side of the ceramic dielectric layer (i.e., the dielectric core layer) as recited in claims 3, 4, 8 and 9, and can be positioned on one side of the ceramic dielectric layer as recited in claims 5 and 10. Where the dielectric layers are positioned on one side of the ceramic dielectric layer, the ceramic dielectric layer is attached to the IC or the chip of the hybrid IC package, as recited in claims 5 and 13.

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Patterson et al., however, is directed to a multiple interconnect comprising a ceramic substrate (abstract), which is shown particularly in the drawing that the ceramic substrate (item 1 in the Figure) is disposed on the bottom of the interconnect. Distinguishable from the claimed invention, Patterson's ceramic substrate is used merely as a "base" without any vias, rather than a "core" layer with vias. As compared with claims 5, 10 and 13 of the present invention, Patterson's ceramic substrate apparently can be only used as a base without any vias disposed on the side opposite to an IC package, rather than as a connecting layer with vias disposed on the side of and being attached to an IC package.

Thus, Patterson's ceramic substrate is rather different from the ceramic dielectric layer of this invention, and one of ordinary skills in the art would not have been motivated to combine Patterson's teaching with the structure disclosed in Background of the Invention. Even if a combination were made, the resulting structure would have been different from that of the claimed invention.

Therefore, the amended claims of this invention are not rendered obvious over the prior art references. Accordingly, Applicants respectfully submit that the grounds of rejection have been addressed and the rejection has been overcome. Reconsideration and withdrawal of the rejection are respectfully requested.

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CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,
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